

UNITED STATES DISTRICT COURT  
DISTRICT OF MAINE

GREGORY FOX, <i>individually</i>	)	
<i>and as Parent of C.F.</i> ,	)	
	)	
Plaintiff,	)	
	)	
v.	)	No. 2:22-cv-00251-JAW
	)	
PENDER MAKIN, <i>in her official</i>	)	
<i>capacity as Commissioner</i> , et al.,	)	
	)	
Defendants.	)	

**ORDER ON MOTION TO PARTIALLY EXCLUDE EXPERT TESTIMONY OF  
DR. LAURA BLAISDELL**

In advance of summary judgment, a plaintiff in a suit challenging the state of Maine's public school vaccination requirements moves to exclude the opinion of a defendant's expert pursuant to Federal Rule of Evidence 702. The defendant opposes exclusion of her expert, arguing her expert's opinion is supported by reliable methodology and further that the plaintiff has conflated distinct scientific concepts. Concluding the defendant's expert presented a sufficient scientific basis and clearly distinguished the bounds of her opinions, the court denies the plaintiff's motion.

**I. PROCEDURAL HISTORY**

On July 22, 2022, Dr. Gregory Fox, individually and as parent of C.F.,<sup>1</sup> and Rita Fox, individually and as parent of C.F. (jointly, the Plaintiffs), filed a lawsuit in the Cumberland County Superior Court for the state of Maine against the state of

---

<sup>1</sup> The Court refers to Dr. Fox's minor son by his initials, C.F., in accordance with the Federal Rule of Civil Procedure 5.2. See FED. R. CIV. P. 5.2(a)(3).

Maine, the Maine Department of Education, Maine School Administrative District (MSAD) 51, and various state and local officials (collectively, the Defendants), alleging the Defendants violated the United States Constitution in promulgating and implementing a vaccination policy at MSAD 51. *Notice of Removal*, Attach. 1, *Compl.* (ECF No. 1). The Defendants initially identified themselves as forming two groups: the State Defendants (the state of Maine, the Maine Department of Education, and Maine Department of Education Commissioner Pender Makin) and the School Defendants (MSAD 51, MSAD 51 Superintendent Jeffrey Porter, Mabel I. Wilson Elementary School Principal Sally Loughlin, and Mabel I. Wilson Elementary School Vice Principal Corey Munsey). *Notice of Removal* at 1, 3. On August 17, 2022, the case was removed to this Court. *Id.*

With the Court's permission, the Plaintiffs filed an amended complaint on December 14, 2022 that did not name either the state of Maine or the Maine Department of Education as defendants and thus left Commissioner Makin and the School Defendants as the only defendants. *Pls.' Mot. to Am. Compl.* (ECF No. 32); *Order* (ECF No. 41); *Pls.' Am. Compl.* (ECF No. 45).

Next, ruling on motions to dismiss from Commissioner Makin and the School Defendants, respectively, on August 16, 2023, the Court dismissed all claims against MSAD 51 and Principal Loughlin, who had retired, and further dismissed all claims for money damages against Commissioner Makin, Superintendent Porter, and Mr.

Munsey.<sup>2</sup> *Order on Defs.’ Mots. to Dismiss* (ECF No. 81). After the Court’s order, the only surviving claims were against Commissioner Makin, Superintendent Porter, and Mr. Munsey in their official capacities for declaratory and injunctive relief.<sup>3</sup> *Id.*

Following the submission of pre-filing memoranda, the Court held a Local Rule 56(h) conference on September 18, 2024, *Min. Entry* (ECF No. 154), and the next day issued an order on the conference providing a schedule for the proposed motions for summary judgment and responses. *Order on Local Rule 56(h) Conf.* (ECF No. 155) (*Order*). At the conference, counsel also raised the possibility that they might file motions relating to the introduction of expert witness testimony under *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579 (1993), and *Kumho Tire Co. v. Carmichael*, 526 U.S. 137 (1999). *Id.* The Court allowed the parties to confer and decide whether to file the dispositive and *Daubert* motions simultaneously or, alternatively, to file the *Daubert* motions first. *Id.*

---

<sup>2</sup> After Principal Loughlin retired, Mr. Munsey was promoted to principal of Mabel I. Wilson Elementary School. *Order on Defs.’ Mots. to Dismiss* at 5 n.7.

<sup>3</sup> On November 20, 2023, the Plaintiffs moved to amend the amended complaint, seeking to modify their prayer for relief based on C.F. aging out of Mabel I. Wilson Elementary School and to add a claim for equitable reimbursement of the expenses paid to educate C.F. *Pls.’ Second Mot. to Am. Compl.* (ECF No. 90). On February 22, 2024, a United States Magistrate Judge issued an order and recommended decision on the second motion to amend complaint, recommending the Court grant the motion to amend the complaint insofar as it requests placement in the relevant school for the age of the Plaintiffs’ child at the time of the judgment but deny the motion insofar as it requests equitable reimbursement. *Order and Recommended Decision on Mot. to Am. Compl.* at 13 (ECF No. 96). On July 11, 2024, over the objection of Dr. Fox, the Court affirmed the Magistrate Judge’s recommended decision. *Order on Obj. to Recommended Decision* (ECF No. 118). Ms. Fox filed her second amended complaint on July 14, 2024, and Dr. Fox filed his second amended complaint on August 1, 2024, each of which incorporated the contents of the first amended complaint with revisions to the prayers for relief.<sup>3</sup> *Pl. Rita Fox’s Second Am. Compl.* (ECF No. 119); *Pl. Gregory Fox’s Second Am. Compl.* (ECF No. 127).

Commissioner Makin, with the support of the School Defendants, moved to amend the scheduling order on October 11, 2024, asking the Court to permit filing and resolution of *Daubert* motions before summary judgment. *Mot. to Amend Scheduling Order* (ECF No. 158). Dr. Fox responded in opposition to an amendment to the scheduling order on October 15, 2024. *Pl.'s Opp'n to Comm'r Makin's Mot. to Amend Schedule ECF 158* (ECF No. 161). Commissioner Makin replied on October 17, 2024 and the School Defendants replied on October 18, 2024. *Def. Makin's Reply in Support of her Mot. to Amend Scheduling Order* (ECF No. 162); *School Defs.' Reply in Support of Def. Makin's Mot. to Amend Scheduling Order* (ECF No. 164).

On October 21, 2024, the Court granted Commissioner Makin's motion to amend scheduling order over Dr. Fox's objection, staying the deadlines for the filing of motions for summary judgment until the *Daubert* motions are resolved and setting deadlines for the parties to file *Daubert* motions, oppositions, and replies. *Order on Mot. to Am. Scheduling Order* at 6-7 (ECF No. 165). On October 25, 2024, Dr. Fox, acting pro se, petitioned the Court to reconsider its order. *Pet. to Recons. the Decision to Reset Deadlines as to the Ct.['s] Order ECF 165* (ECF No. 167). The Court dismissed Dr. Fox's motion for reconsideration on November 4, 2024. *Order on Pet. to Recons.* (ECF No. 168).

On November 8, 2024, in accordance with the deadlines set in the Court's order on motion to amend scheduling order, Dr. Fox moved on *Daubert* grounds to exclude certain testimony by Commissioner Makin's expert witness, Dr. Laura Blaisdell, and

requested a hearing on the issue.<sup>4</sup> *Pl.’s Mot. to Partially Strike Expert Testimony of Dr. Laura Blaisdell*[/] *Pl.’s Mot. for Oral Hr’g on Mot. to Strike* (ECF No. 170) (*Pl.’s Mot.*); *Additional Attachs.* (ECF No. 172). Commissioner Makin and the School Defendants each responded in opposition to Dr. Fox’s motion on December 6, 2024. *Def. Pender Makin’s Resp. to Pl. Gregory Fox’s Mot. to Partially Strike Expert Testimony of Dr. Laura Blaisdell* (ECF No. 177) (*Makin’s Opp’n*); *School Defs.’ [Resp.] to Pl.’s Mot. to Partially Strike Expert Testimony of Dr. Laura Blaisdell and Mot. for Oral Hearing on Mot. to Strike* (ECF No. 178) (*School Defs.’ Opp’n*). Dr. Fox replied in support of his motion on December 21, 2024. *Pl.[/]* *Gregory Fox’s Reply in Partial Mot. to Strike Testimony of Laura Blaisdell* (ECF No. 189) (*Pl.’s Reply*).

The Court issues this order to address Dr. Fox’s motion to partially exclude the expert testimony of Dr. Blaisdell.

## II. THE PARTIES’ POSITIONS

### A. Dr. Fox’s Motion to Exclude Testimony

Dr. Fox moves to exclude certain opinions proffered by Defendant’s expert, Dr. Blaisdell, arguing “they are based on unreliable data, insufficient facts, and unsupported methodologies without foundation relevant to the claims at issue.” *Pl.’s Mot.* at 1. Specifically, Dr. Fox asserts Dr. Blaisdell applied an erroneous methodology to reach her conclusion “regarding the necessary threshold of protection

---

<sup>4</sup> Dr. Fox calls his motion “a motion to partially strike” select portions of Dr. Blaisdell’s testimony. Based on his articulated goal of precluding introduction of Dr. Blaisdell’s expert opinion regarding the public health goal of 95% vaccination rate threshold in schools and references to Federal Rule of Evidence 702, *Daubert*, 509 U.S. 579, and *Kumho Tire Co.*, 526 U.S. 137, the Court understands Dr. Fox’s motion as a motion to exclude expert testimony and recharacterizes it as such.

in a partially vaccinated population” because her chosen methodology contemplated a “‘totally susceptible’ population” despite the relevant population being more than 93.5% vaccinated. *Id.* at 2. On these grounds, Dr. Fox insists Dr. Blaisdell’s methodology was not relevant to the facts of the case. *Id.* at 3.

Dr. Fox elaborates that Dr. Blaisdell erred “when she inferred a 95% vaccination rate threshold was necessary to protect susceptible individuals or stop the transmission of disease,” which he asserts is the foundation of Defendants’ purported compelling state interest in its regulation. *Id.* Dr. Fox emphasizes that Dr. Blaisdell relied on others to calculate herd immunity rather than doing so herself, and claims “it’s more than troubling” that Dr. Blaisdell applied a “totally susceptible” population methodology that has only one variable—the  $R_0$ , pronounced R-naught—despite her awareness of multiple alternative mathematical models to calculate a herd immunity threshold of protection. *Id.* at 4. Dr. Fox accepts the accuracy of Dr. Blaisdell’s methodology if applied to a “totally susceptible” population but urges the Court to conclude her opinion is unreliable as applied to the facts of this case. *Id.* He proffers that, when given the opportunity during her deposition, Dr. Blaisdell “was unwilling to provide any methodology” for the vaccine threshold for a partially vaccinated population. *Id.* at 4-5 (citing *id.*, Attach 6, *Video Dep. of Dr. Laura Blaisdell* at 146:22-148:7 (*Blaisdell Dep. Tr.*)).

Dr. Fox continues that Commissioner Makin’s counsel, Assistant Attorney General (AAG) Kimberly L. Patwardhan, also recognized the “[l]imits of Dr. Blaisdell’s reliable scientific expertise” during her deposition through her statement:

This is beyond the scope of Dr. Blaisdell's expert report. She already said she never calculated a herd immunity threshold. She relied on various other sources that she has identified to you in forming her public health expert opinion. It is beyond the scope of this expert deposition and beyond her testimony to inquire about whether or not she has done particular calculations. She has already testified that she hasn't done that.

*Id.* at 5 (citing *Blaisdell Dep. Tr.* at 140:4-19). Dr. Fox also claims that, in so stating, AAG Patwardhan "sought to disrupt the testimony and limit relevant material facts from entering the record." *Id.* at 6.

The Plaintiff argues, despite the accuracy of Dr. Blaisdell's methodology to a totally susceptible population, that the expert's failure to consider alternate methodologies "does not explain the observable 'drift' in expert opinion from central topic of herd immunity and scientific methodology to 'generally acceptable vaccination goal.'" *Id.* at 7. Dr. Fox asserts the expert provided no methodology to support the 95% vaccination goal as an "accepted public health goal and standard to ensure prevention of school outbreaks." *Id.* at 7-8 (citing *Additional Attachs.*, Attach. 4, *Expert Rep. of Dr. Laura Blaisdell, M.D., M.P.H., F.A.A.P.* at 4 (*Blaisdell Rep.*)). Dr. Fox argues Dr. Blaisdell's opinion regarding the "1) required or 2) theorized quantitative vaccination threshold as a basis is the inadmissible element of Dr. Blaisdell's opinion." *Id.* at 8 (emphasis removed).

Dr. Fox also asserts he "may use the admissible portion of Dr. Blaisdell's expert testimony as part of [his] argument to undermine the Defendant's position or to establish the defendant has failed to meet it[]s burden of proof," claiming Dr. Blaisdell's status as Defendant's expert witness makes her "an agent of the defendant" and thus her testimony "may be regarded as a party admission" pursuant

to Federal Rule of Evidence 801. *Id.* at 8-9 (citing, e.g., FED. R. EVID. 801(d)(2)) (emphasis removed). He insists Dr. Blaisdell's statements, while not admissible as fact, may be presented either as Rule 801(d)(2) admissions, which are not subject to Rule 702 or the *Daubert* standard, or under the "principle of agency." *Id.* at 9.

Dr. Fox next alleges that the Defendants have provided no data to suggest non-religious exemptions to vaccination requirements pose a lesser risk of disease transmission and argues the state of Maine cannot "assume 'the best' of individuals engaged in their secular lives while assuming 'the worst' about the habits of religious persons." *Id.* at 9 (citing *Roberts v. Neace*, 958 F.3d 409, 414 (6th Cir. 2020) (citation amended)). Dr. Fox emphasizes that, when asked about the comparability of transmission during her deposition, Dr. Blaisdell answered "the risk of transmission is unknowable." *Id.* at 10 (citing *Blaisdell Dep. Tr.* at 24:4-5, 15-23).

Finally, Plaintiff directs the Court to additional exhibits which he argues "contradict [the] unsound methodology posed by Dr. Blaisdell." *Id.* He focuses on her statement:

Immunization rates that are greater than 95% are the generally accepted public health goal and standard to ensure prevention of outbreaks . . . This experience is illustrated in Maine between 2011 and 2019 when vaccine preventable disease (VPD) outbreaks occurred during a time when school vaccine rates dropped. Pertussis (i.e. whooping cough) outbreaks struck at least 11 schools in Cumberland, Hancock, Lincoln, and York counties during this time." *Id.* (citing *Blaisdell Rep.* at 6-7). Dr. Fox points out that 78% of Pertussis cases were those with up-to-date vaccines in 2018, while in 2019 64% of Pertussis cases were vaccinated individuals.

*Id.* at 10-11 (citing *id.*, Attach 11, *Pertussis: Me. Surveillance Rep. 2018* ; *id.*, Attach. 12, *Pertussis: Me. Surveillance Rep. 2019*). Furthermore, Plaintiff says, "Dr. Blaisdell



has offered no research supporting her statements of Pertussis and prevalence or incidence during the 2011-2019 years, nor any research methodology disclosed, no epidemiology study or cited results of data.” *Id.* at 11.

Dr. Fox concludes that the Court should exclude Dr. Blaisdell’s opinion regarding a generally accepted 95% vaccination goal as unreliable in the context of the facts of the present case. *Id.* at 11.

### **B. Commissioner Makin’s Opposition<sup>5</sup>**

Commissioner Makin opposes Dr. Fox’s requested exclusion of Dr. Blaisdell’s testimony, asserting Plaintiff’s motion “collapses two related, but distinct concepts: 1) biostatistical herd immunity thresholds and 2) public health targets for school immunization rates.” *Makin’s Opp’n* at 1. Commissioner Makin quotes the explanation Dr. Blaisdell gives in her expert report:

Because not everyone in a community can be vaccinated, mathematical models calculate the critical threshold number of people needed to be vaccinated in a given community for a given communicable disease. Generally, immunization rates greater than 95% in schools is the accepted public health goal and standard to ensure prevention of school outbreaks.

*Id.* at 2 (quoting *Blaisdell Rep.* at 4). Commissioner Makin argues that “[a]lthough these two sentences are sequential, they address separate concepts.” *Id.* The first sentence, she says, “addresses herd immunity thresholds, which are disease-specific calculations that identify ‘the level of population immunity that is necessary for [an]

---

<sup>5</sup> The School Defendants also oppose Dr. Fox’s motion to exclude Dr. Blaisdell’s testimony “for the same reasons set forth in the Response filed on behalf of Commission Pender Makin, ECF 177, which the School Defendants incorporate by reference pursuant to Fed. R. Civ. P. 10(c).” *School Defs.’ Opp’n* at 1. As the School Defendants do not independently assert any arguments in opposition to Dr. Fox’s motion, the Court reviews only Commissioner Makin’s arguments for the purposes of this order.

infection to be no longer self-sustaining in the population.” *Id.* (citing *Pl.’s Mot.*, Attach 5, Peter G. Smith, *Concepts of herd protection an immunity*, 2:2 PROCEDIA IN VACCINOLOGY 134-39 (2010) (*Smith Article*) (citation revised); *Blaisdell Rep.* at 2, 21). The second sentence, she distinguishes, “identifies public health vaccination goals, which take into account not only herd immunity thresholds, but also vaccine effectiveness and geospatial clustering.” *Id.*

Commissioner Makin argues Dr. Fox’s motion conflates these two concepts by presuming the 95% vaccination goal equates to a herd immunity threshold. *Id.* at 2-3. She responds to Dr. Fox’s positions that the 95% goal is scientifically unsupported and that Dr. Blaisdell erred in calculating a herd immunity threshold based on a totally susceptible population in turn. *Id.* at 3. First, Commissioner Makin asserts herd immunity thresholds are calculated using  $R_0$ , which varies by disease and constitutes “the average number of other persons that an infectious person will infect with an agent in a completely susceptible population.” *Id.* (citing *Blaisdell Dep. Tr.* at 131:22-133:1, 141:2). Commissioner Makin explains, in layman terms:

if the  $R_0$  of a particular disease or infection is 12, then one infected person will, on average, infect 12 other persons because none of those 12 persons are immune to the infectious agent (either by immunization or prior infection). On the other hand, if the  $R_0$  of a disease or infection were less than 1, then one infected person will, on average, not infect any other person. Accordingly, the higher the value the  $R_0$ , the more infectious the disease.

*Id.* Commissioner Makin points out that Dr. Fox concedes a disease’s  $R_0$  range is calculated based on natural studies of a “completely susceptible population” and adds that, due to effective vaccination programs in the United States, the  $R_0$  of certain diseases are unknowable and likely higher than the generally accepted ranges. *Id.*

at 3-4 (citing *id.*, Attach. 1, *Decl. of Laura Lilienthal Blaisdell, M.D.* ¶ 11 (*Blaisdell Decl.*)).

Herd immunity thresholds, Commissioner Makin says, rely on a disease's  $R_0$  to conduct a further calculation, through multiple mathematical models, of the level of population immunity required for disease elimination. *Id.* at 4. “Dr. Blaisdell generally relies on other experts for calculations of  $R_0$  and herd immunity thresholds in forming her public health opinions.” *Id.* (citing *Blaisdell Dep. Tr.* 134:17-20). However, Commissioner Makin says,  $R_0$  is the basis of “every herd immunity threshold calculation.” *Id.* (Defendant's emphasis). Commissioner Makin claims Dr. Fox “is conflating  $R_0$ , i.e., the basic reproductive number, with  $R$ , i.e., the effective reproductive number, which considers the proportion of a population that is immune to a particular disease or infection” and that the herd immunity threshold remains constant regardless of the  $R$  for a given population because it is the calculation that reduces  $R$  to less than one, signifying when an infected person will infect less than one other person on average. *Id.* (citing *Smith Article* at 3; *Blaisdell Decl.* ¶ 13) (Defendant's emphasis). Commissioner Makin insists medical literature has generally understood and accepted that a herd immunity threshold is calculated based on  $R_0$ , not  $R$ . *Id.* at 4-5 (citing *Blaisdell Decl.* ¶ 14; *Ruiz-Troche v. Pepsi Cola of P.R. Bottling Co.*, 161 F.3d 77, 84 (1st Cir. 1998)).

Turning to her second argument, Commissioner Makin submits that, while herd immunity thresholds are used to determine school vaccination goals, the two are distinct and calculated through different methodologies and Dr. Fox has presumed

that the herd immunity threshold calculation “equated to the 95% public health vaccination goal.” *Id.* at 5. She points out that Dr. Blaisdell distinguished the two as “distinctly different” in her deposition and that Dr. Fox “failed to fully explore the methodology” that gave rise to the 95% vaccination goal. *Id.* (citing *Blaisdell Dep. Tr.* at 155:25-158:7, 166:9-167:4).

Commissioner Makin explains further that the 95% public health school vaccination goal is based on the herd immunity threshold for a particular disease, but also acknowledges the risk that a generally accepted  $R_0$  for a particular disease is understated, that vaccines are not 100% effective or always available, and the geospatial clustering of susceptible individuals in schools. *Id.* at 5-6 (citing *Blaisdell Decl.* ¶¶ 11, 15-20). To account for these factors, Commissioner Makin submits, the rate of vaccination coverage must be higher than the herd immunity threshold, resulting in Dr. Blaisdell’s conclusion that “immunization rates greater than 95% in schools is the accepted public health goal and standard to ensure prevention of school outbreaks.” *Id.* at 6 (quoting *Blaisdell Rep.* at 2). The 95% immunization rate goal is supported by the United States Centers for Disease Control and Prevention (U.S. CDC) and the Maine Center for Disease Control and Prevention (Maine CDC), as well as by data regarding vaccine-preventable diseases in Maine. *Id.* (citing *Blaisdell Rep.* at 6-7).

Finally, Commissioner Makin argues Dr. Fox errs by challenging the data underlying Dr. Blaisdell’s report based on individual cases, rather than outbreaks, and adds that challenges to the factual basis of an expert opinion goes to credibility,

not admissibility, and should be developed during cross-examination. *Id.* (citing *Brown v. Wal-Mart Stores, Inc.*, 402 F. Supp. 2d 303, 308 (D. Me. 2005) (quoting *Larson v. Kempker*, 414 F.3d 936, 941 (8th Cir.2005) (quotations and citations omitted)). Thus, Commissioner Makin concludes, the Court should deny Dr. Fox's motion. *Id.* at 7.

### **C. Dr. Fox's Reply**

Dr. Fox replies in support of his motion to exclude Dr. Blaisdell's expert opinion, arguing Commissioner Makin's arguments that public health goals governing the necessity of vaccines are "subject to both the effectiveness of the vaccine and coverage rates" were raised for the first time in her response. *Pl.'s Reply* at 1. Plaintiff submits Dr. Blaisdell's declaration that vaccines are not 100% effective is an expansion of her expert testimony and fails to explain the difference in risk posed by a student recipient of an ineffective vaccine and a student with a religious exemption. *Id.* at 2. Dr. Fox points out Dr. Blaisdell opines non-medical exemptions pose a risk to herd immunity but does not offer a similar opinion regarding the increased risk of the ineffective vaccine nor explain why ineffectiveness poses less risk than unvaccinated individuals. *Id.* at 2-3 (citing *Blaisdell Rep.*). He emphasizes Dr. Blaisdell's opinion fails to explain how vaccine effectiveness affects determinations of geospatial clustering or population susceptibility and posits that Dr. Blaisdell's assertion regarding vaccine effectiveness in fact serves to undercut Commissioner Makin's reasoning for removing religious exemptions to vaccination requirements. *Id.* at 3-4.

Dr. Fox argues Dr. Blaisdell's declaration serves as an admission that her report is unreliable and seeks to add additional testimony via declaration to buttress her conclusions without providing the Plaintiff with an opportunity to cross-examine her on the new information, as the discovery period closed on July 18, 2024. *Id.* (citing *LaPlace-Bayard v. Battle*, 295 F.3d 157 (1st Cir. 2002)). He also asserts Dr. Blaisdell refers to "outbreaks" by erroneously blending state levels of infection, which are not specific to schools, and vaccine coverage rates in schools. *Id.* at 4.

Plaintiff contends Dr. Blaisdell's opinion failed to consider vaccine effectiveness, was not based on accepted methods of assessing comparability of risk, and did not discuss rates of error, such that her testimony is conclusory and unsupported by the scientific record. *Id.* He continues that Commissioner Makin's citations to other public health agencies that have accepted the goal of a 95% vaccination rate are unpersuasive because she does not address why other states maintain religious exemptions to school vaccines. *Id.* at 5.

### III. LEGAL STANDARD

The admissibility of expert testimony is a question of law governed by Federal Rule of Evidence 702 and by the United States Supreme Court's rulings in *Daubert*, 509 U.S. 579, *Kumho*, 526 U.S. 137, and their progeny. Rule 702 provides:

A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:

- (a) the expert's scientific, technical, or otherwise specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
- (b) the testimony is based on sufficient facts or data;

(c) the testimony is the product of reliable principles and methods;  
and

(d) the expert has reliably applied the principles and methods to  
the facts of the case.

FED. R. EVID. 702. The First Circuit has “long entrusted federal trial judges to be ‘gate-keeper[s],’ empowered by Rule 702 and *Daubert* to ‘ensure that an expert’s testimony “both rests on a reliable foundation and is relevant to the task at hand.”” *United States v. Vargas*, 471 F.3d 255, 261 (1st Cir. 2006) (quoting *Daubert*, 509 U.S. at 597).

In general, “[e]xpert testimony is admissible if ‘scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue’ and if the proposed witness is qualified as an expert by some specialized ‘knowledge, skill, experience, training, or education.’” *Liberty Mut. Ins. Co. v. Broan-NuTone LLC*, No. 21-cv-11986-DLC, 2024 U.S. Dist. LEXIS 76408, at \*5-6 (D. Mass. Apr. 26, 2024) (quoting *Daubert*, 509 U.S. at 588). “A district court may exclude expert testimony where it finds that the testimony has no foundation or rests on . . . speculative evidence.” *Schubert v. Nissan Motor Corp. in U.S.A.*, 148 F.3d 25, 29-30 (1st Cir. 1998) (quoting *Casas Office Machs., Inc. v. Mita Copystar Am., Inc.*, 42 F.3d 668, 681 (1st Cir. 1994)); accord *Gonzalez-Arroyo v. Drs.’ Ctr. Hosp. Bayamon, Inc.*, 54 F.4th 7, 14 (1st Cir. 2022) (“to provide admissible testimony, an expert must render conclusions ‘in a scientifically sound and methodologically reliable fashion’”) (quoting *Milward v. Acuity Specialty Prods. Grp., Inc. (Milward I)*, 639 F.3d 11, 15 (1st Cir. 2011))).

“Neither *Daubert* nor Rule 702 permits expert opinions grounded only in the unsupported assertions of the expert.” *Gonzalez-Arroyo*, 54 F.4th at 14 (citing *López-Ramírez v. Toledo-González*, 32 F.4th 87, 94 (1st Cir. 2022)). “[T]he overarching concern is on the ‘evidentiary relevance and reliability’ of the proposed testimony,” with speculative expert testimony often satisfying neither criterion. *Seahorse Marine Supplies, Inc. v. P.R. Sun Oil Co.*, 295 F.3d 68, 81 (1st Cir. 2002) (quoting *Daubert*, 509 U.S. at 595). Should a court determine an expert opinion is unsupported, the First Circuit directs “a court may conclude that there is simply too great an analytical gap between the data and the opinion proffered, provided that gap is not of the district court’s making.” *Gonzalez-Arroyo*, 54 F.4th at 14 (citing *López-Ramírez*, 32 F.4th at 94) (internal citations and quotation marks omitted)).

Exclusion of proposed expert witnesses often occurs in the run-up to trial; however, the First Circuit has clarified that the same standard applies to motions brought at the summary judgment stage. *Samaan v. St. Joseph Hosp.*, 670 F.3d 21, 32 (1st Cir. 2012) (“a *Daubert* hearing appropriately may be held at the summary judgment stage”) (citing *Cortes-Irizarry v. Corp. Insular De Seguros*, 111 F.3d 184, 188 (1st Cir. 1997)); accord *Alt. Sys. Concepts, Inc. v. Synopsys, Inc.*, 374 F.3d 23, 31-32 (1st Cir. 2004) (“Evidentiary rulings have the potential to shape and winnow the scope of the summary judgment inquiry, and a trial court should have as much leeway in dealing with those matters at the summary judgment stage as at trial”). However, on summary judgment, “courts must be cautious -- except when defects are obvious on the face of a proffer -- not to exclude debatable scientific evidence without affording



the proponent of the evidence adequate opportunity to defend its admissibility.” *Cortes-Irizarry*, 111 F.3d at 188.

#### IV. DISCUSSION

Dr. Fox does not generally dispute Dr. Blaisdell’s qualifications as an expert witness, a wise decision in light of her multiple advanced degrees in medicine and public health, longstanding board-certification as a pediatrician, and academic experience as an educator with a focus on vaccination and infectious diseases. *See Blaisdell Rep.* at 2. Rather, Dr. Fox focuses specifically on Dr. Blaisdell’s opinion regarding a target 95% vaccination rate, which he complains is unreliable and unsupported by a scientific methodology as applied to the facts of the case based on Dr. Blaisdell’s erroneous presumption of a “totally susceptible” population, as demonstrated through her use of the variable  $R_0$ . *Pl.’s Mot.* at 6-8. Commissioner Makin responds that Dr. Fox conflates herd immunity threshold rates with public health targets for vaccination rates in schools, and further that Dr. Blaisdell’s use of  $R_0$  to determine the relevant herd immunity threshold is a generally accepted practice. *Makin’s Opp’n* at 1-5.

The Court first considers whether Dr. Blaisdell has provided sufficient support for her methodology of using  $R_0$  to calculate a herd immunity threshold. Two of the scientific articles cited by Dr. Blaisdell in her report apply  $R_0$  as the basis for calculating herd immunity thresholds. *Blaisdell Decl.* ¶ 14 (citing *Makin’s Opp’n*, Attach. 3, Paul Fine, et al., “Herd Immunity”: A Rough Guide, 52:7 CLINICAL INFECTIOUS DISEASES 911-16 (2011); *id.*, Attach. 4, Pedro Plans-Rubió, *Evaluation of*

*the establishment of herd immunity in the population by means of serological surveys and vaccination coverage*, 8:2 HUM. VACCINES & IMMUNOTHERAPEUTICS 184-88 (2012)). Further, as pointed out by Commissioner Makin, *Concepts of herd protection and immunity*, the article cited by Dr. Fox in support of his motion, also uses the  $R_0$  of particular diseases to calculate their respective herd immunity thresholds. See *Smith Article* at 3.

While the use of this methodology in other scientific literature is not dispositive as to its reliability, the First Circuit has held that “publication and peer review also demonstrate a measure of acceptance of the methodology within the scientific community.” *Ruiz-Troche*, 16 F.3d at 84; see also *id.* at 85 (“While the literature does not irrefutably prove the accuracy of [the expert’s] conclusions, it furnishes a sufficient underpinning for those conclusions to forfend preclusion of his testimony as unreliable”). Notably, Dr. Fox himself concedes the accuracy of the  $R_0$  methodology to calculating herd immunity thresholds for “totally susceptible” populations but argues this calculus is inapposite here, where the population is only “partially susceptible.” *Pl.’s Mot.* at 4-5. Dr. Fox may seek to undermine the factual underpinnings of Dr. Blaisdell’s use of  $R_0$  based on this basis, but these criticisms go toward the weight and credibility of her testimony, rather than admissibility. *Kirouac v. Donahoe*, No. 2:11-cv-00423-JAW, 2013 U.S. Dist. LEXIS 6331, at \*5-6 (D. Me. Jan. 16, 2013) (“If the factual underpinnings of [the expert’s] opinions [are] in fact weak, that [is] a matter affecting the weight and credibility of [the experts’] testimony”) (quoting *Payton v. Abbott Labs.*, 780 F.2d 147, 156 (1st Cir.1985)). The

Court thus concludes Dr. Blaisdell's use of  $R_0$  to calculate herd immunity thresholds does not disqualify her expert opinion as inherently unreliable.

Continuing to Dr. Fox's claim that Dr. Blaisdell's asserted goal of 95% vaccination coverage lacks scientific support, Dr. Fox argues Dr. Blaisdell erred "when she inferred a 95% vaccination rate threshold was necessary to protect susceptible individuals or stop the transmission of disease." *Pl.'s Mot.* at 3. Commissioner Makin responds that Dr. Fox conflates the herd immunity threshold with the public health goal for vaccination in schools. *Makin's Opp'n.* at 2-3, 5-6.

Dr. Blaisdell's expert report states: "[g]enerally, immunization rates greater than 95% in schools is the accepted public health goal and standard to ensure prevention of school outbreaks." *Blaisdell Rep.* at 4. In support, she cites Renee Seither, et al., *Coverage with Selected Vaccines and Exemption Rates Among Children in Kindergarten - United States, 2023-24 School Year*, 73:41 MORBIDITY & MORTALITY WKLY REP. 925-932 (2024) (*Seither Article*), which discusses a target of 95% vaccination coverage for measles, mumps, and rubella (MMR) in kindergarten age children. *Id.* (citing *Seither Article* at 929). Dr. Blaisdell's report also discusses anecdotal evidence of outbreaks of Pertussis at Maine schools in 2018, which corresponded with vaccination rates of kindergarten students declining below the target 95% threshold from 2011 to 2019. *Id.* at 6-7 (citing e.g., *Safer Schools Through Community Immunity*, ME. IMMUNIZATION COALITION; *Me. Monthly Pertussis Surveillance Rep. Dec. 2019*, ME. DEP'T OF HEALTH AND HUM. SERVS.). Commissioner Makin adds that the 95% vaccination coverage public health goal aligns with targets

articulated by the U.S. CDC and Maine CDC. *Makin's Opp'n* at 6 (citing U.S. CDC, *CDC Call to Action: What Schools Can Do to Promote Routine Vaccination Catch-Up Among School Aged Children* (noting "target of 95% routine kindergarten vaccination coverage by ensuring all kindergarteners without a documented exemption are vaccinated"); Maine CDC, *2023-24 Me. Immunization Assessment Rep.* (stating goal of "the Maine Immunization Program to bring the State vaccine coverage rate average for each of these vaccines to 100%"))).

At deposition, Dr. Blaisdell clearly distinguished herd immunity thresholds from public health goals for vaccination coverage in schools:

[Dr. Blaisdell]. You keep referencing this 95 percent. That is a public health recommendation for vaccination levels.

[Dr. Fox]. Okay.

[Dr. Blaisdell]. And you seem to confuse it with herd immunity thresholds. And so I want to be very clear that a 95 percent vaccination rate for any particular vaccine is a public health recommendation.

[Dr. Fox]. Is it a threshold, or is it a -- it is a --

[Dr. Blaisdell]. That is not a herd immunity threshold.

[Dr. Fox]. 95 percent is not?

[Dr. Blaisdell]. It is a -- in my expert testimony I have said that that is the -- the -- I will read. "Generally, immunization rates greater than 95 percent in schools is the accepted public health goal and standard to ensure prevention of school outbreaks." That is distinctly different, Dr. Fox, than a herd immunity threshold for which we've had this conversation about calculations -- very scientific and detailed calculations for which I rely on other experts to give me that data.

*Blaisdell Dep. Tr.* at 155-25-156:21. In her declaration, Dr. Blaisdell further explains the basis for the difference; while herd immunity threshold is a factor in the public health goals, so too are the facts that an accepted  $R_0$  for a particular disease may be

understated, that vaccines are not 100% effective or always available, and the geospatial clustering of susceptible individuals in schools, all of which lead to the public health goal for vaccination being higher than the herd immunity threshold. *Blaisdell Decl.* ¶ 15-20.

Dr. Fox takes issue with the fact that Commissioner Makin, through Dr. Blaisdell, raises vaccine efficacy arguments for the first time in her opposition to his motion to exclude Dr. Blaisdell's testimony. *Pl.'s Reply* at 4. However, the First Circuit is clear that, before excluding expert opinion at the summary judgment stage, a court should permit the proponent of the evidence to defend its admissibility. *Cortes-Irizarry*, 111 F.3d at 188. By the Court's read, the Defendant did just that. Dr. Fox further complains Dr. Blaisdell fails to compare risks related to vaccine efficacy to risks stemming from religious-based exemptions to vaccinations. *Pl.'s Reply* at 2-3. Dr. Fox may seek to undermine the credibility and weight of the 95% vaccination coverage goal with this argument, but *Daubert* does not require a party to prove an expert's assessment is correct, just that it "rests upon 'good grounds, based on what is known.'" *Ruiz-Troche*, 161 F.3d at 85 (quoting *Daubert*, 509 U.S. at 590); *see also Kirouac*, 2013 U.S. Dist. LEXIS 6331, at \*5-6 ("If the factual underpinnings of [the expert's] opinions [are] in fact weak, that [is] a matter affecting the weight and credibility of [the expert's] testimony") (quoting *Payton*, 780 F.2d at 156). The Defendant's expert has met this bar.

Based on her cited scientific sources and articulated methodology, the Court concludes Dr. Blaisdell has distinguished herd immunity threshold calculations from

the public health goal of 95% vaccination coverage and has provided sufficient evidentiary support for the Court to admit her expert opinion that 95% is a commonly accepted goal for vaccination coverage in schools.<sup>6</sup>

## V. CONCLUSION

The Court DISMISSES without prejudice Gregory Fox's Motion to Partially Strike Expert Testimony of Dr. Laura Blaisdell and Motion for Oral Hearing on Motion to Strike (ECF No. 171).

SO ORDERED.

/s/ John A. Woodcock, Jr.  
JOHN A. WOODCOCK, JR.  
UNITED STATES DISTRICT JUDGE

Dated this 10th day of March, 2025

---

<sup>6</sup> The Court further considered Dr. Fox's request for oral argument on his motion to exclude the testimony of Dr. Blaisdell. *Pl.'s Mot.* at 1. As the Court concluded it could properly resolve the motion based on the parties' written submissions, an oral argument would only delay the resolution of the motion and the Court thus declines to schedule oral argument.